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SiO_2	SO_3	Fe_2O_3	Al_2O_3	Loss.
91.12	5.30	.43		1.52.

—*Kröhnkite* ($\text{Cu SO}_4 + \text{Na}_2 \text{SO}_4 + 2 \text{H}_2\text{O}$) from Chili, is monoclinic, according to Darapsky¹ with $a : b : c = 1 : 2.112 : 0.649$. $B = 64^\circ 8'$. Its hardness is 2.5, and specific gravity, 1.98.

BOTANY.²

THE TREATMENT OF EXSICCATI IN THE HERBARIUM.—Whether exsiccati should be kept as they are published, or cut up and distributed in the Herbarium, is a question of sufficient importance, it seems to me, to warrant a brief consideration. Exsiccati are generally arranged arbitrarily, and unless well indexed, are often labyrinths to those who are unfamiliar with them. Those which have a separate index to each fasciculus are bad enough, but, unfortunately, many of the largest and best sets have no index at all, and those whose indexes are published separately are continually outgrowing them. If distributed in the herbarium, the specimens are always at hand, and a student does not need to examine indexes to see whether a given species is in such or such a set, but can find all the specimens from every set together in the herbarium, thus saving time and patience, and making comparison of specimens more easy. Much of the synonymy becomes in time forgotten and obsolete, and many exsiccati are for this reason almost useless. But if distributed, the synonymy of each specimen can be kept up with the times by means of labels on the sheet on which it is mounted, and thus many specimens made useful which otherwise would be of but little value for reference.

The common objection to cutting up and distributing exsiccati is that it destroys their identity. But in most exsiccati the name, etc., is printed on the label of each specimen, and if not, these labels can easily be stamped. References to exsiccati are, as a rule, by number, but if distributed, the specimens can be found by name without the number, and when found the number is with them to show that they are the specimens referred to. Besides, if distributed, they can be found by many who have not noticed these references.

¹ Neues Jahrb. f. Min., etc. 1889. 1. p. 192.

² This department is edited by Professor Charles E. Bessey, Lincoln, Neb.

A strong objection, however, to cutting up exsiccati is found in cases where species are described in them, and the exact dates of the descriptions are wanted. These dates are generally given on the covers of the fasciculi, and are, of course, lost if the set is cut up and the specimens distributed. This can be partially remedied by preserving these covers, as the number of each specimen will indicate to which one it belongs; and this one objection is certainly overcome by the manifest advantages of wider usefulness, greater convenience of reference, and saving of time otherwise spent in determining synonymy.—*Roscoe Pound*.

ANEMONE CYLINDRICA GR. WITH INVOLUCELS.—Last year, in running over some Nebraska plants from Lincoln, with Mr. Pound, we noticed undoubted specimens of *Anemone cylindrica* Gr., with one or two peduncles bearing two leaved involucels. Further examination of numerous specimens collected in the same vicinity at different times shows this peculiar feature to be of quite common occurrence. The leaves of the involucels are similar to those of the involucre.

Authors, in characterizing this species, describe the peduncles as naked; it is remarkable, then, that this peculiarity should occur so commonly.

It may be a hybrid with *A. dichotoma* L., which is provided with an involucel, and occurs here commonly.—*H. J. Webber*.

POLYGONUM INCARNATUM ELL. WITH FOUR-PARTED PERIANTH.—A form of *Polygonum incarnatum* Ell. is found commonly in the vicinity of Lincoln, Neb., having the perianth four-parted instead of five-parted as always described. On most heads, however, a few flowers may be found having the normal five sepals. *P. incarnatum* belongs to the section *Persicaria* Tourn., characterized as having a five-parted perianth. *P. virginianum* L., belonging to the section *Tovaria* Adans., which has the perianth four-parted, is found in the same vicinity. It is the *only* other four-sepaled species occurring.—*H. J. Webber*.

INFECTION OF THE BARBERRY; HOW PERFORMED.—Let us suppose that we wish to perform the classical infection of the barberry with *Puccinia graminis*. In the autumn, six young barberries, small enough to be covered with a bell-glass, having been planted, as soon as their leaves are fully developed in the spring, they may be infected in the following manner: A quantity of *Puccinia graminis* having also been provided in the autumn, and kept during the winter in

the mode before explained,¹ as soon as the barberry foliage is ready, test the germination power of the *P. graminis* by placing a few fragments in water in a watch-glass. If it germinate freely and produce a good crop of mycelical spores, as proved by microscopic examination, the contents of the watch-glass may be at once employed. It is best to do your infection experiments in the evening. Water one of the barberries freely, through the nose of a watering-can, and then cover it with a bell-glass; then water the outside of the bell-glass. By so doing, the temperature of the enclosed air is reduced, and the inside of the bell-glass, as well as the leaves of the barberry become bedewed with condensed vapor. After leaving it a few minutes, remove the bell-glass and apply the germinating spores with a camel-hair pencil. As the promycelial spores easily become diffused in the water in the watch-glass, by stirring it with the camel-hair pencil the water becomes equally charged with them; then by simply brushing the water on the leaves you may be pretty sure of successfully infecting the plant. Replace the bell-glass and give it another douching outside with the watering-can. If sufficient material has been prepared, each alternate barberry may be infected in the same manner. The bell-glass need not be kept over the infected plants more than two or three days. If the weather be very bright, the bell-glasses should be shaded by putting a piece of matting or carpet over them to prevent the foliage being scorched by the sun. In the course of eight or ten days the yellow spots, on which the spermogonia are produced will appear, and in two or three weeks the perfect æcidiospores will be developed. It will then be seen that only those barberries to which the spores were applied have the æcidiospores on them, while the alternate plants remain free. If an attempt be made to infect a plant in the daytime, when the sun's rays are full upon it, it will be found that the water all runs off the leaves; but by operating in the evening, in the manner directed, the leaves are bedewed with a thin layer of moisture, and no difficulty will be found in applying the spore-charged water.—*C. B. Plowright, in Monograph of Uredineæ and Ustilagineæ.*

A TRUE FIELD MANUAL OF BOTANY.—The publishers announce that they will bring out an edition of the new revision of "Gray's Manual," with narrow margins, and with limp cover binding, for field use. As this will bring the book

¹ Bundles of straw containing teleutospores are to be collected in the autumn, and kept out of doors during the winter, so that they may be subjected to the same vicissitudes of temperature and moisture as would happen to them in a state of nature.

down to a pocket size, every teacher ought to insist upon this edition for use in his botanizing classes. It is understood that the revision will include the plants of the prairies, and of the great plains up to the eastern limits of the region covered by "Coulter's Manual," *i. e.*, about the 100th meridian.—*Charles E. Bessey.*

DISTRIBUTION OF KANSAS FUNGI.—Dr. W. A. Kellerman and Mr. W. T. Swingle, well known mycological students of Manhattan, Kansas, have undertaken to make a distribution of Kansas fungi. The first fascicle consists of twenty-five species very neatly put up, with printed labels. The species represented are the following:

Aecidium aesculi E. & K. *Aecidium dicentrae* Trelease. *Ceratophorum uncinatum* (Clinton) Sacc. *Cercospora cucurbitae* E. & E. *Cercospora desmanthi* E. & K. *Cercospora lateritia* Ell. & Halsted. *Cercospora seminalis* E. & E. *Gloeosporium apocryptum* E. & E. *Gloeosporium decipiens* E. & E. *Melasmia gleditschiae* E. & E. *Microsphaera quercina* (Schw.) Burrill. *Peronospora arthuri* Farlow. *Peronospora corydalis* DeBary. *Phragmidium speciosum* Fr. *Puccinia emaculata* Schw. *Puccinia schedonnardi* Kell. & Sw. *Puccinia* (*Leptopuccinia xanthii*) Schw. *Ramularia virgaureae* Thuem. *Roeselia pyrata* (Schw.) Thaxter. *Scolecotrichum maculicola* E. & K. *Septoria argophylla* E. & K. *Septoria speculariae* B. & C. *Sphaerotheca phytoptophila* Kell & Sw. *Uredo quercus* Brondeau. *Ustilago zeae mays* (DC.) Winter.

ZOOLOGY.

THE NERVOUS SYSTEMS OF ANNELIDS AND VERTEBRATES.—Mr. John Beard analyzes in a recent number of *Nature* the Annelidan features found in the development of the Vertebrate nervous system, and adds some points of his own. He claims that the spinal ganglia arise not from the neural ridges but from the adjacent ectoderm, and in such a manner as to justify their comparison with the parapodial ganglia described by Kleinenberg in *Lepadiorhynchus*. Again, the two halves of the neural plate are separated at an early stage by a median groove of ciliated epithelium, and therefore the nervous system is ontogenetically paired. This ciliated groove ultimately furnishes the epithelial lining of the neural